

# Pioneers 10 Through 12 Support

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*This article reports on the activities of DSN Operations in support of the Pioneer 10 and 11 and Pioneer 12 (Pioneer-Venus) Missions from 16 December 1979 through 31 May 1980.*

## I. Introduction

The information contained in this article covers the cruise phases of Pioneer 10, Pioneer 11, and Pioneer 12 orbital operations and the continuing efforts of the Deep Space Network in support of Pioneer Mission Operations.

## II. Mission Operations and Status

### A. Pioneer 10

This spacecraft each day continues to set distance records. As of this report it has achieved a distance of 20 AU, which relative to Earth puts it at a distance of 6,811,500,000 kilometers on its course out of the solar system. The data being received from the spacecraft continues to indicate all onboard systems are functioning nominally.

### B. Pioneer 11

The Pioneer-11 onboard systems continue to function nominally. The spacecraft continues on its course out of the solar system in the opposite direction of its sister spaceship (Pioneer 10). At present Pioneer 11 is at a distance relative to Earth of 2,760,600,000 kilometers.

### C. Pioneer 12

The Pioneer-12 Venus Orbiter continues in a healthy state. Data received from the spacecraft indicates that all of its onboard systems are functioning nominally. Since the last occultation cycle in December 1979, there has been no occultation activity.

## III. Special Activities

The Deep Space Network Compatibility Test Area (CTA-21) continues to support Pioneer Project command software development and command operator training.

## IV. Summary

At this time, Pioneer 10, 11, and 12 spacecraft appear to be operating nominally. Pioneers 10 and 11 are in cruise mode and Pioneer 12 continues Venus orbital operations. Tracking coverage from November 1979 through May 1980 is shown in Table 1.

**Table 1. Pioneers 10 through 12 tracking coverage**

Month	Pioneer spacecraft	Station type	Number of tracks	Tracking time (hrs/mins)
November 1979	10	34 m	11	62:31
		64 m	36	241:29
	11	26 m	28	205:09
		34 m	1	3:30
		64 m	6	37:57
	12	26 m	50	283:32
		34 m	1	3:30
		64 m	68	482:24
December 1979	10	34 m	1	4:15
		64 m	49	313:15
	11	26 m	28	219:49
		34 m	3	26:03
		64 m	19	151:42
	12	26 m	53	405:32
		34 m	4	27:16
		64 m	42	362:36
January 1980	10	64 m	41	312:14
	11	26 m	30	271:08
		64 m	18	137:51
	12	26 m	43	351:07
		34 m	2	9:30
		64 m	58	405:41
February 1980	10	64 m	36	233:00
	11	26 m	28	191:09
		64 m	23	149:51
	12	26 m	60	528:13
		34 m	4	25:45
		64 m	33	190:36
March 1980	10	26 m	4	5:25
		34 m	6	17:19
		64 m	38	217:52
	11	26 m	31	210:46
		34 m	4	21:10
		64 m	19	139:13
	12	26 m	80	588:29
		34 m	4	28:26
		64 m	48	197:11
April 1980	10	26 m	3	7:17
		34 m	3	5:19
		64 m	37	140:16
	11	26 m	35	250:04
		34 m	3	25:45
		64 m	18	120:44
	12	26 m	71	546:15
		34 m	21	129:44
		64 m	18	92:27
May 1980	10	34 m	3	8:29
		64 m	36	246:05
	11	26 m	40	290:36
		34 m	2	14:42
		64 m	9	64:28
	12	26 m	76	611:33
		34 m	21	111:25
		64 m	8	57:04